Use of Fluorescent Molecular Beacons in the Detection of Methylated Nucleic Acids

Abstract

The present invention provides a method for detecting methylated nucleic acids comprising the steps of: 1) contacting a nucleic acid sample suspected of containing methylated nucleotides with an oligonucleotide sequence under suitable conditions for nucleic acid hybridization, said oligonucleotide sequence characterised in that, (i) it comprises a first stem labeled with a fluorophore moiety, a loop sequence having a region of nucleotides complementary to at least a region of the nucleic acid sample, which region is susceptible to methylation, and a second stem labeled with a quencher moiety that is capable of quenching the fluorophore moiety when in spatial proximity to the fluorophore moiety; and (ii) the nucleotides forming the first stem are capable of moving into spatial proximity with the nucleotides forming the second stem when the probe is dissociated from the nucleic acid sample; 2) altering the hybridization conditions such that the oligonucleotide probe dissociates from methylated DNA but remains hybridized to methylated DNA; and 3) measuring the change in fluorescence.